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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/537,566	11/09/2005	Christopher Paul Revill	1316K-000028/NP	3569

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HARNESS, DICKEY & PIERCE, P.L.C.
P.O. BOX 828
BLOOMFIELD HILLS, MI 48303

EXAMINER	
AMORES, KAREN J	

ART UNIT	PAPER NUMBER
3616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/537,566	REVILL ET AL.	
	Examiner	Art Unit	
	KAREN AMORES	3616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22 and 24-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *7 and 34-36* is/are allowed.

6)☒ Claim(s) *1,4,6,8-12,17 and 18* is/are rejected.

7)☒ Claim(s) *2,3,5,13-16,19-22 and 24-33* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 June 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Acknowledgements

1. Acknowledgment is made of Applicants' amendment to the claims filed on 27 February 2008. Amendments to the specification are accepted. New claims34 – 36 are entered and claim 23 is cancelled.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1, 4, 6 – 12, 17, 35, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heyring et al. U.S. 6,270,098 ("Heyring '098") in view of Heyring et al. U.S. 6,761,371 ("Heyring '371"). Heyring '098 discloses a vehicle suspension system having a damping and stiffness system for a vehicle (column 1, line 11), the vehicle including a vehicle body and a first pair and a second pair of diagonally spaced wheel assemblies (column 1, line 16), the first pair of diagonally spaced wheel assemblies including at least one front left wheel assembly and at least one back right wheel assembly (column 2, line 7), the second pair of diagonally spaced wheel assemblies including at least one front right wheel assembly and at least one back left wheel assembly (column 5, line 16), the damping and stiffness system including:

4. at least one wheel ram located between each wheel assembly and the vehicle body (column 5, line 46), each ram including at least a compression chamber (column 5, line 50);

5. a load distribution unit interconnected between the compression chambers of the front left, front right, back left and back right wheel rams (column 5, line 65), the load distribution unit

including first and second piston rod assemblies (34 and 35), first, second, third and fourth system volumes and first and second modal resilience volumes (fig. 4),

6. the first piston rod assembly defining first, second, third and fourth effective areas, the second piston rod assembly defining fifth, sixth, seventh and eighth effective areas, the first and second piston rod assemblies being located within the load distribution unit such that each piston rod assembly can rotate about and slide along a major axis of the piston rod assembly (column 8, line 58),

7. the first effective area defines a movable wall (22) of the first system volume such that as the first piston rod assembly slides along its major axis, the volume of the first system volume varies, the second effective area defines a moveable wall of the second system volume, the third effective area defines a movable wall (22) of the first modal resilience volume, the fourth effective area defines a movable wall of the second modal resilience volume (column 1, line 66), the fifth effective area defines a movable wall of the third system volume such that as the second piston rod assembly slides along its major axis (column 2, line 7), the volume of the third system volume varies, the sixth effective area defines a moveable wall (24) of the fourth system volume, the seventh effective area defines a movable wall (23) of the first modal resilience volume, and the eighth effective area defines a movable wall (24) of the second modal resilience volume;

8. the first system volume increasing in volume proportionately to the decrease in volume of the second system volume with motion of the first piston rod assembly, the third system volume increasing in volume proportionately to the decrease in volume of the fourth system volume with motion of the second piston rod assembly,

9. the volume of the first modal resilience volume decreasing proportionately to the increase in volume of the first and third system volumes with motion of the first and second piston rod assemblies, the volume of the second modal resilience volume decreasing proportionately to the increase in volume of the second and fourth system volumes;

10. the first and fourth system volumes being connected to the compression chambers of the wheel rams associated with one of the pairs of diagonally spaced wheel assemblies, the second and third system volumes being connected to the compression chambers of the wheel rams associated with the other pair of diagonally spaced wheel assemblies, the damping and stiffness system thereby providing substantially zero warp stiffness.

11. In reference to claims 4 and 12, Hayring '098 further discloses the first system volume is connected to the compression chamber of the at least one wheel ram associated with the at least one front left wheel assembly, the second system volume is connected to the compression chamber of the at least one wheel ram associated with the at least one back left wheel assembly, the third system volume is connected to the compression chamber of the at least one wheel ram associated with the at least one front right wheel assembly and the fourth system volumes is connected to the compression chamber of the at least one wheel ram associated with the at least one back right wheel assembly, the first modal resilience volume thereby being a front bump resilience volume (30 and 31) and the second modal resilience volume thereby being a back bump resilience volume, the front and back bump resilience volumes thereby providing the damping and stiffness system with additional pitch resilience (column 3, line 38), independent of the roll and heave stiffness of the damping and stiffness system; and wherein the compression

chamber of each of at least two of said wheel rams may be in fluid communication with a respective accumulator (column 4, line 35).

12. Heyring '098 does not directly disclose a front and rear vehicle resilient support means. Heyring '371 teaches a vehicle suspension system including front and rear vehicle resilient support means (17) between the vehicle body and the wheel assemblies for resiliently supporting the vehicle above the wheel assemblies, wherein the vehicle is primarily supported by the vehicle resilient support means which is functionally separate from the damping and stiffness system. It would have been obvious for a person having ordinary skill in the art at the time the invention was made to modify Heyring '098 such that it comprised the front and rear vehicle resilient support means in view of the teachings of Heyring '371 so as to provide independent support means capable of supporting the entire weight of the vehicle (column 11, line 7).

13. In reference to claim 6, Heyring discloses a vehicle suspension system having a damping and stiffness system for a vehicle (column 1, line 11), the vehicle including a vehicle body and at least two forward and two rearward wheel assemblies (column 1, line 15), the damping and stiffness system including:

14. at least two front and two rear wheel rams located between the wheel assemblies and the vehicle body (column 2, line 40), each ram including at least a compression chamber (fig. 1);

15. a load distribution unit (column 7, line 50), includes a first pair of axially aligned primary chambers (18 and 21) and a second pair of axially aligned primary chambers, each primary chamber including a piston (22 – 25) separating each primary chamber into two secondary chambers, a first rod connecting the pistons of the two first primary chambers (column 2, line 60);

16. forming a first piston rod assembly and a second rod connecting the pistons of the two second primary chambers forming a second piston rod assembly (column 2, line 40), one of the secondary chambers in the first pair of primary chambers being a first front system chamber and being connected to the compression chamber of a front wheel ram on a first side of the vehicle (fig. 2), the other secondary chamber in the first pair of primary chambers which varies in volume in the same direction as the first front system chamber with motion of the first piston rod assembly, being a first back pitch chamber (column 1, line 53),

17. one of the secondary chambers in the first pair of primary chambers which varies in volume in the opposite direction as the first front system chamber with motion of the first piston rod assembly being a first back system chamber (32 and 33) and being connected to the compression chamber of a back wheel ram on a first side of the vehicle, the other secondary chamber in the first pair of primary chambers which varies in volume in the same direction as the first back system chamber with motion of the first piston rod assembly, being a first front pitch chamber,

18. one of the secondary chambers in the second pair of primary chambers being a second front system chamber (26) and being connected to the compression chamber of a front wheel ram on a second side of the vehicle, the other secondary chamber in the second pair of primary chambers which varies in volume in the same direction as the second front system chamber with motion of the second piston rod assembly, being a second back pitch chamber (fig. 2), one of the secondary chambers in the second pair of primary chambers which varies in volume in the opposite direction as the second front system chamber with motion of the second piston rod

assembly being a second back system chamber and being connected to the compression chamber of a back wheel ram on a second side of the vehicle (column 1, line 40),

19. the other secondary chamber in the second pair of primary chambers which varies in volume in the same direction as the second back system chamber with motion of the second piston rod assembly, being a second front pitch chamber (column 2, line 7); and

20. the first and second front pitch chambers being interconnected forming a front pitch volume and the first and second back pitch chambers being interconnected forming a back pitch volume (fig 2).

21. In reference to claims 8 – 11 and 17, Heyring further discloses the wheel rams of at least the two front or the two rear wheel rams are single-acting rams (column 1, line 16); wherein each single-acting wheel ram includes a piston dividing the ram into a compression and a rebound chamber (fig. 1), damping being provided in the piston of the ram to provide at least a rebound damping force (fig. 1); wherein the wheel rams at one end of the vehicle are double-acting wheel rams further including a rebound chamber (fig. 1), the rebound chamber of each double-acting wheel ram being connected to the compression chamber of the diagonally opposite wheel ram; wherein each wheel ram is a double-acting ram further including a rebound chamber (fig. 1), the rebound chamber of each double-acting wheel ram being connected to the compression chamber of the diagonally opposite wheel ram; and wherein the front pitch volume is connected to a front pitch accumulator through a front pitch damper valve and the back pitch volume may be connected to a back pitch accumulator through a back pitch damper valve (column 2, line 7), the front and back pitch accumulators provide additional pitch resilience in the stiffness and damping system.

22. Heyring '098 does not disclose the vehicle suspension system including front and rear vehicle resilient support means. Heyring '371 teaches a front and rear resilient support means between the vehicle body and the wheel assemblies for resiliently supporting the vehicle above the wheel assemblies (column 2, line 57), wherein the vehicle is primarily supported by the vehicle resilient support means which is functionally separate from the damping and stiffness system. It would have been obvious for a person having ordinary skill in the art at the time the invention was made to modify Heyring '098 such that it comprised the front and rear resilient support means in view of the teachings of Heyring '371 so as to provide independent support means capable of supporting the entire weight of the vehicle (column 11, line 7).

23. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heyring '098 and '371 as applied to claims 6 and 17 above, and further in view of Kobayashi, U.S. 7,210,688 ("Kobayashi"). Heyring '098 and '371 do not disclose at least one of the front and rear pitch damper valves is a variable damper valve. Kobayashi teaches a variable damper valve (26). It would have been obvious for a person having ordinary skill in the art at the time the invention was made to modify Heyring '098 and '371 such that it comprised the variable damper valve in view of the teachings of Kobayashi so as to suppress bouncing of the vehicle body and mitigate shock from the road surface (column 6, line 4), and maintain vehicle height in accordance with load (column 8, line 24).

Allowable Subject Matter

24. Claims 7 and 34 - 36 are allowed.

25. Claims 2, 3, 5, 13 – 16, 19 – 22, and 24 – 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

26. Applicant's arguments with respect to claims 1 and 6 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

27. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KAREN AMORES whose telephone number is (571)272-6212. The examiner can normally be reached on Monday through Friday, 8:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lesley Morris can be reached on (571)-272-6651. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KAREN AMORES
Examiner
Art Unit 3616

/K. A./
Examiner, Art Unit 3616

/Toan C To/
Primary Examiner, Art Unit 3616
June 2, 2008